

Amendment after final dated 9/15/2003
OIC to enter DOW 10/10/03

Application No. 09/787,033

AMENDMENTS TO THE CLAIMS:

Claims 1-27 (cancelled).

28. (Currently Amended) A synthetic transport entity complex for transferring a nucleic acid of interest across a biological membrane into a cell ~~to a specific location within or on a cell,~~ wherein the complex which is comprised of two or more functional elements (FE), each of which ~~are~~ is complexed to a binding element (BE) in the form of a peptide nucleic acid (PNA) ~~or a derivative or analogue thereof,~~ and a nucleic acid carrier, which comprises at least ~~one~~ two BE target ~~sequence~~ sequences and a nucleic acid of interest in a vector; said ~~complex~~ carrier being hybridized to said ~~carrier~~ complex using the BE-BE interaction.

29. (Currently Amended) The transport entity complex according to claim 28, wherein said two or more FEs provide different functions.

30. (Currently Amended) The transport entity complex according to claim 28, wherein said vector is a plasmid or an oligonucleotide.

31. (Currently Amended) The transport entity complex according to claim 28, wherein the carrier includes a detectable marker element.

32. (Currently Amended) The transport entity complex according to claim 28, wherein the nucleic acid of interest is a gene encoding a peptide, a protein or an RNA.

33. (Currently Amended) The transport entity complex according to claim 28, wherein said BE and FEs are separated by linker elements.

34. (Currently Amended) The transport entity complex according to claim 28, which comprises more than one FE-BE-complex, each one of which is hybridized to a separate BE target sequence present on the same carrier.

35. (Currently Amended) The transport entity complex according to claim 28, wherein the FE is a nuclear localization signal (NLS), or a fragment thereof exhibiting nuclear localizing signal properties.

36. (Currently Amended) The transport entity complex according to claim 28, wherein the FE is a protein exhibiting

properties enabling both membrane translocation and nuclear transport.

37. (Currently Amended) A method for transferring a nucleic acid of interest across a biological membrane of a target cell to ~~a specific location within or on a cell by the use of~~ comprising administering to the cell the synthetic transport entity complex according to claim 28, ~~comprising the steps of:~~

- ~~(a) providing a carrier molecule comprising the nucleic acid of interest in a vector and a binding element (BE) target sequence;~~
- ~~(b) providing a complex by coupling two or more functional elements (FE) to a binding element (BE);~~
- ~~(c) hybridizing the BE of said complex to the BE target of said carrier; and~~
- ~~(d) contacting said transport entity with said biological membrane to provide for a transfer of the nucleic acid of interest across said membrane.~~

38. (Currently Amended) The method according to claim 37, wherein in said transport complex said two or more FEs provide different functions.

39. (Currently Amended) The method according to claim 37, ~~wherein in step (b), a complex is provided,~~ wherein in said transport complex said BE and FEs are separated by linker element(s).

40. (Currently Amended) The method according to claim 37, wherein ~~in step (a),~~ in said transport complex the carrier provided is a plasmid or an oligonucleotide vector comprising said nucleic acid of interest and at least one target sequence.

41. (Currently Amended) The method according to claim 37, wherein ~~in step (a),~~ in said transport complex a detectable marker element is ~~also~~ inserted in said carrier.

42. (Currently Amended) The method according to claim 37, wherein in said transport complex the nucleic acid of interest is a gene encoding a peptide, a protein or an RNA.

43. (Currently Amended) The method according to claim 37, ~~which~~ wherein said complex comprises more than one FE-BE complex, each one of which is hybridized to a separate BE target sequence present on the same carrier.

44. (Previously Presented) The method according to claim 37, wherein the biological membrane is a cell wall.

45. (Currently Amended) The method according to claim 37, wherein the biological membrane is a nuclear membrane, and wherein at least one functional element (FE) of said two or more functional elements is a protein, which enables both membrane translocation and nuclear transport of the nucleic acid of interest.

46. (Currently Amended) The method according to claim 37, wherein in said transport complex the FE is a nuclear localization signal (NLS), or a fragment thereof exhibiting nuclear localizing signal properties.

47. (Currently Amended) The method according to claim 37, wherein in said transport complex the FE is a protein provided in said complex, which enables both membrane translocation and nuclear transport of the nucleic acid of interest.

48. (Currently Amended) A kit comprising components for making a transport entity capable of transferring a nucleic acid of interest across a biological membrane into ~~to a specific location within or on~~ a cell, which kit comprises ~~a binding~~